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PROTECTING LOG CABINS FROM DECAY.(U)
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PROTECTING LOG CABINS FROM DECAY.

USDA Forest Service
Forest Products Laboratory
General Technical Report
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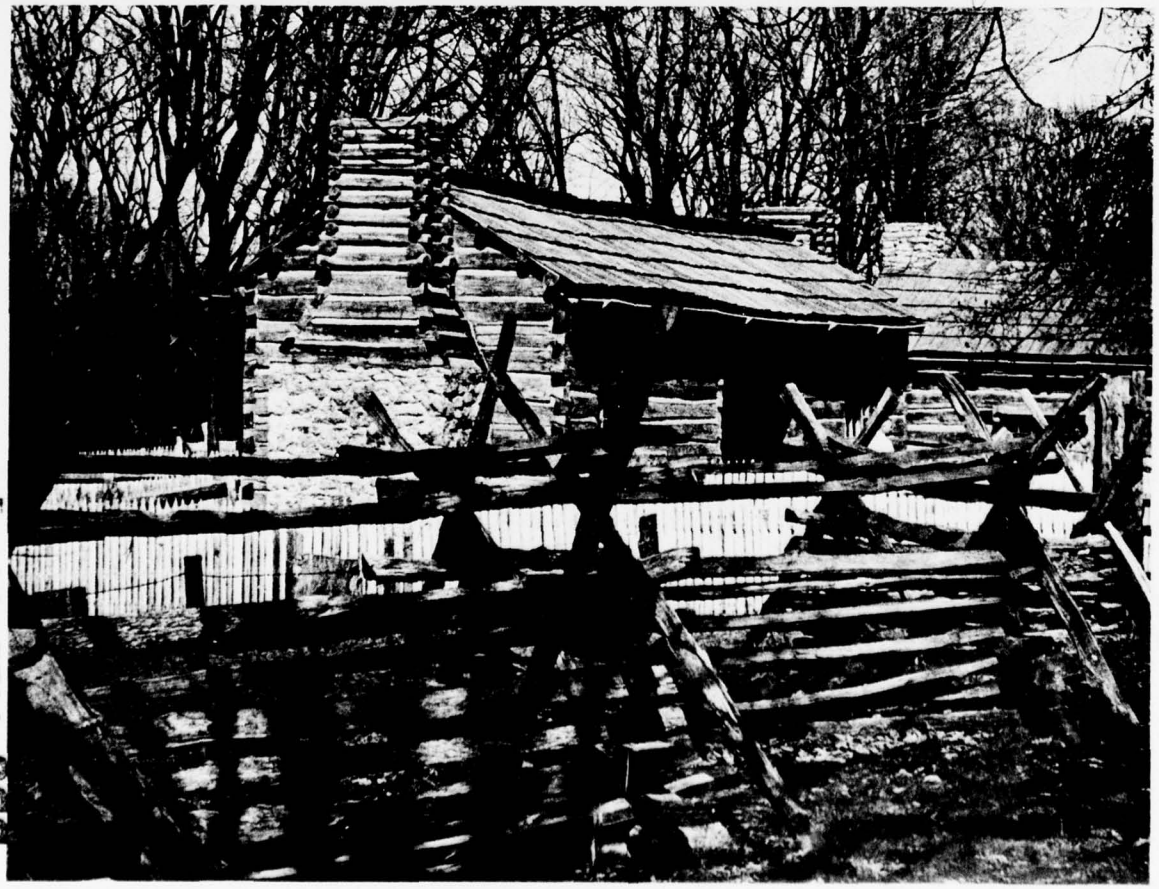
U. S. Department of Agriculture
Forest Service
Forest Products Laboratory
Madison, Wis.



ABSTRACT

This report answers the questions most often asked of the Forest Service on the protection of log cabins from decay, and on practices for the exterior finishing and maintenance of existing cabins.

Causes of stain and decay are discussed, as are some basic techniques for building a cabin that will minimize decay. Selection and handling of logs, their preservative treatment, construction details, descriptions of preservative types, and a complementary bibliography are also included.

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PROTECTING LOG CABINS FROM DECAY[1]

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INTRODUCTION

The Forest Service gets many questions on the protection of log cabins from decay. They come mainly from three groups of people who want to build log cabins: Retirees wanting a retirement home, people wanting a second or summer home, and young people wanting an inexpensive first home. Many who inquire live on timbered land and want to build a cabin from that timber. Whatever the situation, no one wants to build a log cabin that will begin to deteriorate in a short time.

Numerous inquiries about the preservation of log cabins are received from people interested in restoring or maintaining cabins built many years ago. Their problems are somewhat different from those of new-cabin builders, but they, too, want to know what to do about decay.

Building with logs is slower and more difficult than building with lumber, but it offers several advantages: Using logs requires no processing energy for conversion to boards; logs represent a renewable building material available, in some cases, on the builder's property; and building with logs can create an inexpensive livable home.

Many log cabins are built in such a way that decay is almost certain because the builder overlooked simple basic construction practices. A cabin should be well planned before the building starts. A good set of plans and an acquaintance with the skills of cabin building are essential. A few helpful publications on log cabin construction, decay control, and insect damage are listed in the bibliography at the end of this report.

The cabin must be designed for dryness, for protection from rain and ground moisture. Where moisture can accumulate, decay fungi can flourish. Many moisture problems can be eliminated with proper roof overhang, roof vents, and concrete, brick or stone foundations with good drainage. Moisture usually becomes a problem due to poor design, careless workmanship, and poor maintenance. DRY WOOD DOES NOT DECAY. Therefore, the main principles of preventing deterioration are to use construction techniques that reduce water wetting to a minimum and that keep the cabin dry. When this is impossible, the use of preservative-treated wood is recommended.

CAUSES AND CONTROL OF DECAY

Fungal and Insect Damage

Deterioration of wood by decay fungi is the threat to the longevity of a log cabin. There are several classes of fungal damage:

[1]This publication supersedes FPL Report Number 982, "Making Log Cabins Endure: Suggestions on Construction, Log Selection, Preservation, and Finishing." Forest Products Laboratory, 1974.

[2]Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

Sapstains cause almost no strength losses in wood, but create objectionable color changes in wood. They also cause increased permeability in the logs, allowing moisture to settle and inviting more decay organisms. Sapstains may go deep into the log and cannot be removed easily.

Mold discolorations, on the other hand, are usually a surface stain and can be removed by brushing or shallow planing.

Soft-rot fungi cause a more severe type of wood degradation. As they grow, they cause a slow surface deterioration which is characterized by breaks across the surface fibers. The transition between the rotted wood and the sound wood beneath is very abrupt.

Typical *brown- and white-rot fungi* are the most severe types of wood rotters and can cause extensive damage. They cause rapid decay with great reduction in the strength of the wood and often with little visible outward sign. It is these wood-deteriorating fungi that necessitate the use of preservative treatment of wood for specific parts of the log cabin.

Insects, especially termites, can cause damage, too. Proper treatment against fungal decay will help a cabin resist insect damage. Further information on protection from insects is included in the bibliography.

Preservative Treatments

If a log cabin is properly designed, constructed, and maintained, it should give satisfactory service with a minimum of preservative treatment. This is especially true in the colder and drier parts of the country. The appropriate chemical(s) for treatment and the appropriate treatment procedure depend on the design of the structure, geographic location, drainage, and wood species used. For example, if the foundation logs involve direct ground contact, specified ground contact retention with a commercial preservative is generally used; if a masonry foundation is used, then a short soaking procedure with a waterborne salt solution on the lowest two or three logs is satisfactory.

Selection of Preservative

Although many preservatives effectively prevent decay, some of them may not be considered suitable due to their color, odor, or toxicity. Among the oil preservatives, pentachlorophenol carried in a light petroleum solvent results in the least change in log color. Creosote mixtures are very dark in color and copper naphthenate is green, making both unfavorable for a natural appearance. Creosote and pentachlorophenol have odors which may be objectionable and toxic, particularly in freshly treated logs. Most waterborne preservatives have little odor, but some of them leave the wood a light blue or green.

Methods of Application

Pressure impregnation is a rapid and thorough method of treating wood with preservatives. Arrangements for pressure treatment of logs can be made with commercial wood-preserving plants. A variety of water-borne wood preservatives can be applied by pressure to meet different use requirements. Whole-log pressure treatments with pentachlorophenol or creosote will create an odor which is toxic inside the log cabin. PENTACHLOROPHENOL AND CREOSOTE SHOULD NEVER BE USED INSIDE THE CABIN FOR ANY REASON. For treatment of all the whole logs used in the construction of cabins, only waterborne salts are recommended.

Diffusion process can be used to treat logs with waterborne preservatives. "Simple diffusion" consists of soaking the wood for a period of 1 to 2 weeks in the preservative solution and can be used if the wood is dry.

Double-diffusion is slower than simple diffusion but very thorough. The wood is soaked first in one chemical solution, then in a second. The two chemicals meet in the wood and react with each other to form a preservative that water cannnot leach out. By varying the soaking times, the chemical concentrations, and the temperatures of the solution, different degrees of treatment can be obtained.

Soaking or dipping the outside ends of logs or small pieces in a water-repellent preservative containing pentachlorophenol can provide adequate protection to most exterior parts of a cabin.

Treatment of Cut Surfaces

Logs treated by any of the methods described may need to be cut and trimmed to fit into the structure or to form millwork such as window sills. Such cut surfaces will expose untreated wood, which will provide entrance

for decay fungi. All cut surfaces that will be exposed to the weather must be treated onsite by brushing or dipping in a water-repellent preservative solution.

BUILDING TO PREVENT DECAY

Selection and Handling of Logs

Type of Wood

Under some conditions, naturally decay-resistant wood species may be used in the building of a log cabin. The heartwood of such species as baldcypress, cedars, redwood, black locust, red mulberry, white oak, osage-orange, black walnut, and Pacific yew produces substances that repel most decay organisms. These species should be used if available, especially for foundation logs, sill logs, and low wall logs not protected by roof overhang. Because the resistance of these woods rests entirely in the heartwood, reasonably long life can be expected only from logs having little sapwood. Sapwood, regardless of species, has a very low resistance to decay and sapstain. Most woods other than those listed here have little resistance either in the heartwood or sapwood. When such nonresistant species are used in foundation, sill, and low wall logs, they should be preservative treated.

Log Preparation

Green logs.--A log cabin can be built with green logs, but construction techniques are limited. Mixed horizontal and vertical log placement cannot be done due to the differences in final dried dimensions. Windows and doors should not be fitted until the logs have dried to an equilibrium moisture content. It is recommended that logs be dried before construction begins.

Unpeeled.--Logs with the bark left intact are almost impossible to protect from deterioration over long periods of time. The bark slows down drying of the logs to such an extent that some decay in the interior is almost certain to occur before the log becomes fully seasoned.

Furthermore, bark encourages the attack of such insects as bark beetles and some wood borers. Because of these insects and loosening by shrinkage, the bark usually falls off or is easily knocked off in patches after a short period of time. For these reasons, unpeeled logs are not recomended for log cabin construction.

Peeled.--Practically all log structures are built with peeled or debarked logs because of the ease of building and maintenance, easier preservative treatment, greater durability, and aesthetic appearance. The remainder of this report presupposes that peeled logs are being used.

Cutting and peeling of the logs should be done during the cold months so that some drying can take place before the warm weather. Although logs are usually more difficult to peel in winter than in spring or early summer, the protection afforded against fungi and insects by winter peeling more than offsets the extra labor.

The peeled logs should be piled off the ground in the open so that air can circulate freely around each piece. Six months of air drying is recommended. If possible, the logs should be stored in an open shed or shelter that protects against driving rains. This is most important when drying those hardwood logs that have little or no natural decay resistance.

Preservative Treating of Logs

To avoid stain and mold during the warm part of the year or in mild climates, the freshly peeled logs should be treated by spraying or brushing all surfaces with a 1 to 3 percent solution of sodium pentachlorophenate in water (see preservative I in the appendix). This treatment should be done within a day of peeling, as staining usually begins quickly under warm weather conditions. The logs should remain piled and properly separated by stickers until seasoning is complete. Additional application of the antistain preservative solution may be necessary. As logs begin to dry, they may 'check'--develop lengthwise splits that run through several annular rings--opening up fresh wood to decay. When the logs start to check, a reapplication of sodium pentachlorophenate in water will control decay and sapstain (preservative I in appendix).

If the logs are to be treated by a diffusion process, the freshly cut green logs can be treated directly, then piled for air drying.

The "simple diffusion" process (preservative II) can be used on freshly cut, unseasoned, or partially seasoned wood. It works best on dry wood. Double diffusion (preservative III),

though slower, is more thorough than simple diffusion and more variable. It is desirable for logs that will be used as sill logs or low wall logs. A commercial treatment (IV) may also be available.

As logs are cut and trimmed to fit or to form millwork, new exposed surfaces become susceptible to decay fungi. Such surfaces, as they are cut, should be brushed with a water-repellent, preservative solution (V).

Construction Details

Foundation

Of first importance in protecting a log cabin from decay or insect damage is the foundation (Figure 1).

Drainage.--Good drainage will help keep the foundation dry. Storm water should not be allowed to accumulate around the foundation or under the building. The cabin site should be graded or ditched so that water drains away from the building. Eave troughs, downspouts, and wide eaves will direct the water away from the cabin and, therefore, help greatly in keeping the foundation dry.

Piers and posts.--All too often, log cabin builders take the course of least resistance and lay the bottom logs directly on or close to the ground. Placing untreated wood in direct contact with the ground is one of the surest ways of hastening its decay. When wood is placed in contact with the ground, the soil moisture has direct access to the wood and keeps it constantly damp. This dampness sets up conditions that are most favorable for growth of the fungi that cause decay.

Unless the logs are treated in accordance with preservatives III or IV (appendix), good building practice dictates that bottom logs or sills be placed 12 to 18 inches above the ground on foundations that will keep the wood dry. Stone or concrete foundations or piers are excellent.

Ventilation.--Good ventilation beneath the floor is important because it keeps the soil and the wood dry. Foundation posts or piers allow good ventilation unless the spaces between them are filled solid. Screen or latticework between the piers will improve the appearance, keep animals out, and still allow good ventilation. Wood lattice, unless it is made of decay-resistant or treated wood, should not touch the ground.

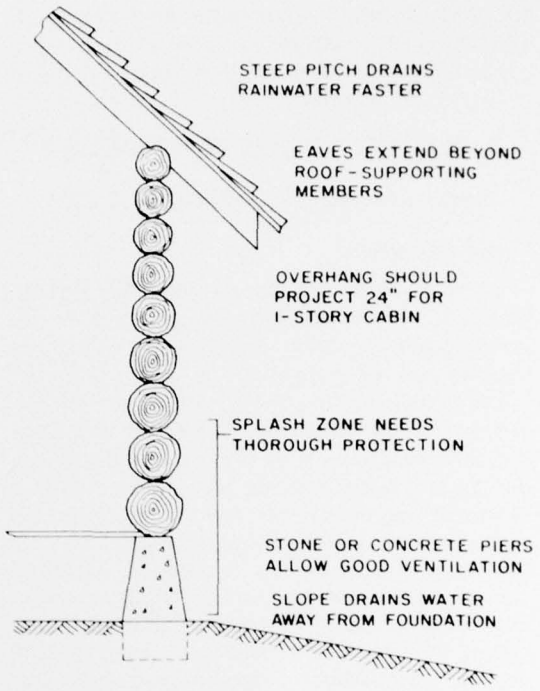

Figure 1.--Good construction techniques work together to keep a cabin dry and free from decay.
(M 144 767)

If solid foundation walls are preferred to piers, generous openings should be provided at frequent intervals to allow good air circulation. When solid foundation walls are used on damp sites, a soil cover of heavy grade roll roofing or polyethylene sheeting will help to prevent moisture evaporation from the soil and thereby reduce the decay hazard.

If the building is used throughout the year in the colder parts of the United States, good ventilation will cause cold floors in the winter. This may be prevented by insulating the floor under the cabin and boarding up the openings in cold weather. Openings should be uncovered during the rest of the year.

Termites.--In some parts of the country, termites cause considerable trouble to log cabins. The ground-inhabiting termites are the most plentiful and most important type in the United States. These termites leave an outside shell of wood intact when working above ground, and may do a great deal of damage before being discovered. A common method of

protection is the application of a soil poison around the foundation with an EPA-registered pesticide. Wood properly treated with preservatives is protected against termites, so thorough treatment of the foundation timbers, at least, is desirable. Masonry or similar foundations, 18 to 24 inches high and free from cracks, will offer only limited protection from termite attack. In using bricks, the joints should be filled with a cement mortar dense enough that termites cannot tunnel through it. Hollow block foundations should be capped with a layer of reinforced concrete at least 4 inches thick. If termites are very active, they may build mud tunnels over the treated wood or masonry foundation, until they can enter the untreated wood above.

Walls

In putting up the walls of a log cabin and in framing the window and door openings, care should be taken to avoid forming crevices where water can accumulate and soak into the wood. Fittings should be made as tight as practicable, and they should be supplemented by calking at places most likely to take up water. Storm water does little harm to the cabin if it can run off quickly. However, if the water is caught in joints, crevices, or checks, it will soak into the wood and dry out very slowly. Decay may easily start in these damp areas. In constructing the cabin, major cracks or checks in the logs should be placed down so they will not entrap water.

The joints between logs are of special concern as possible water-trapping zones. It is important, therefore, that they be suitably chinked.

One of the most practical methods of chinking is to staple 2-inch strips of metal lath on the outside of the cracks and to chink with standard chimney mortar. The mortar consists of two parts of cement, one part of dry hydrated lime, and six parts of clean, sharp, screened sand. This mortar must be mixed in small batches to keep it from hardening before it can be applied.

The Oklahoma State University of Agriculture and Applied Science, Stillwater, Okla., has reported a successful method of chinking with spar varnish, linseed oil, and mineral wool of the kind sold in batts for insulation. Exterior varnish is brushed on the joints between the logs. Before it dries, rock wool is tamped into place with the end of a board about 3/8 inch thick and 6 inches wide. Varnish or linseed oil is applied to the exposed surface of the rock wool by sweeping the brush over the surface quickly to avoid deep penetration of the liquid. Brown rock wool can be used on the outside and white on the inside of the building. This chinking adheres tenaciously to the logs. It has enough elasticity to compensate for log shrinkage except where the logs have twisted badly. Where the chinking has broken loose because of such twisting, it can easily be tamped back into place. Insects and rodents are not inclined to attack chinking of this kind.

Other methods of chinking include the use of oakum or moss driven tightly between the logs, and the use of commercial calking or filling compounds.

Tight joints may also be obtained by cutting deep grooves accurately in the top and bottom surfaces of each log and inserting a spline, or by hollowing out the underside of each log carefully to fit the log beneath (Figure 2).

Roof

A wide roof overhang is one of the most effective features to be built into a log cabin. It helps combat decay in walls and foundations and around doors and windows. Good projection of eaves and slope of the roof will divert much rainwater that would otherwise flow over the walls. The greater the pitch of the roof, the faster the rainwater moves down, projecting the water farther away from the house. Recommended projection is not less than 18 inches (preferably 24 in.) for a one-story house, and not less than 24 inches (preferably 36 in.) for a two-story house. The wider overhangs are particularly desirable in areas of high rainfall.

Roof-supporting members of logs or of sawn lumber should not project beyond the eaves. If they do, they will become easily wetted and susceptible to decay.

FINISHING DETAILS

For the cabin builder or the cabin buyer, the price for a sound, enduring cabin is good care. A finish on the inside and outside surfaces of a brand new cabin completes the decay-resistant construction. An older cabin, too, profits from an occasional coat of preservative. Also, throughout the service life of the

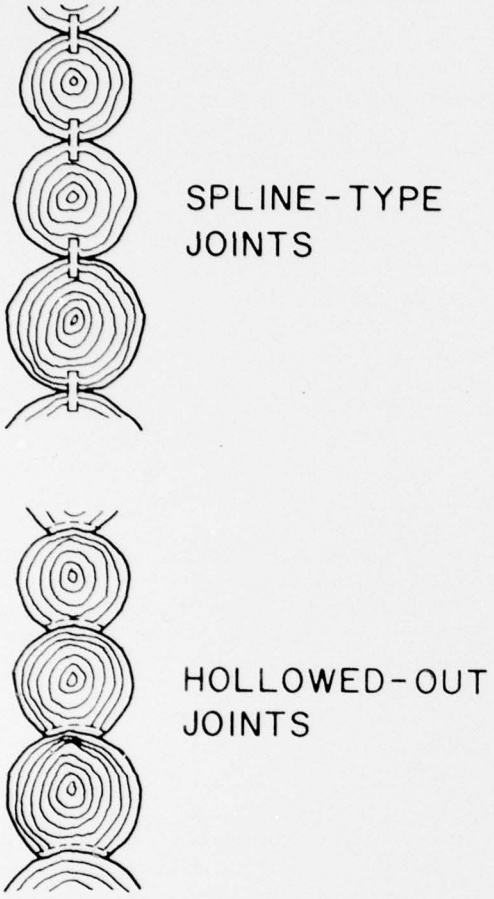

Figure 2.--Various joint techniques will help keep water from settling between logs.
(M 144 766)

cabin, all cracks, crevices, and joints should be inspected as possible starting points for decay.

Interior

Except for sills and the lower rail in windows, there is no need for interior application of preservative solutions. Because the inside is exposed to relatively constant low moisture conditions, the inside surfaces are not susceptible to mold growth.

A good finish for the interior of log cabins should prevent soiling or staining, provide for good cleanability, and enhance the natural color and grain of wood. A non-yellowing alkyd varnish based on safflower or soybean oil would serve exceptionally well. Other conventional interior varnishes, floor seals, penetrating oils, or lacquers, however, can also be used. When staining of the wood is desired, it is advisable to seal the wood first, then apply the stain and follow with another coat of clear sealer or varnish. Stain may be combined with the sealer in the second application.

Exterior

The preferred finishes for log cabins are those that are generally referred to as the natural type of finish. These are either the penetrating water-repellent preservatives or the penetrating pigmented stains. Penetrating finishes have the very distinct advantage of not failing by blistering or peeling like varnish or paint and are, therefore, very easily maintained or refinished.

Preservative-type finishes contain a fungicide and inhibit the growth of fungus (mildew), which is the primary cause of graying of wood. These finishes allow the wood to weather to a very natural light brown or tan color. An effective practical treatment includes thoroughly brushing the exterior of the cabin with a water-repellent preservative solution after erection (preservative V in the appendix).

Because the joints between logs, exposed end grain, and any drying cracks that develop are common water-trapping zones, particular attention should be given to these areas and heavy application of the water-repellent solution is advised every other year as a maintenance procedure. This finish usually lasts about 2 years before small gray spots of fungal growth start to appear on surfaces, indicating a need for refinishing.

Penetrating pigmented stains (preservative VI) are also very effective natural finishes for log cabins. These finishes change the color of wood, obscure part of the grain, and are less natural in appearance than the preservative finishes. These stains, when applied as described in the appendix, can last 10 years or longer.

Film-forming exterior varnishes, even marine or spar varnish grades, *are not recommended* because of their short life when fully exposed to the direct sun and because of the difficulty in refinishing.

RESTORING AND MAINTAINING EXISTING CABINS

Once a cabin has been built, it is impractical to disassemble it and retreat the logs by soaking. To maintain existing cabins, the outside surfaces of critical decay areas should be treated by preservative brushing methods every 2 years. The critical areas are the lower portions of windows and doors, joints between boards, exposed end grain, and the lowest two or three logs (ground splash zone).

Decayed wood should be removed and the exposed wood liberally treated with water-repellent preservative solution. To facilitate treatment of hard-to-get-to areas which may have some decay, 1/4-inch holes can be drilled in the wood and filled with the preservative solution; the hole should be plugged with a treated wood dowel. These critical areas should be treated every 2 years by a liberal application of a water-repellent preservative solution (see preservative V in the appendix). The water-repellent preservative solutions are widely distributed through most paint stores and lumberyards.

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APPENDIX: PRESERVATIVE SOLUTIONS

Wood preservatives come in a variety of forms, concentrations, and trade names. They are usually available at paint and hardware stores and lumberyards. The chemicals that comprise various preservatives, the solvents that carry them, their colors, smells, and toxicity all help to determine their safest, most effective, and practical use.

The text of this report has provided some of the why's and wherefore's of the uses of various preservatives. This appendix lists recommended solutions, instructions for their preparation, and safe and efficient application. Amounts of preservative necessary should be carefully figured. It is better to mix another small batch than to have to dispose of leftovers.

Preservative I--Stain Preservatives

Freshly peeled logs will tend to stain almost immediately. This antistain solution can prevent that.

Mix 1 to 3 pounds of sodium pentachlorophenate with 12 gallons (approx. 100 lb) of water. Brush solution on logs within 1 day of peeling, especially in warm weather.

Preservative II--Simple Diffusion

Preservative protection is especially desirable for the lowest two or three logs of a cabin. Logs can be treated when they are freshly peeled or after they have been air dried for some months. The "simple diffusion" process is relatively easy to use.

Many different compounds can be used for a simple diffusion preservative; a 10 percent solution is recommended. Mix 10 pounds of zinc chloride with 12 gallons (approx. 100 lb) water.

Whole logs should soak in the solution for 1 to 2 weeks. Any small parts such as steps, rails, or window sills can be soaked for half that time. Treated logs should be allowed to dry for 1 to 2 weeks after the soaking process and before construction begins.

Preservative III--Double Diffusion

"Double-diffusion" is a more time-consuming treatment but provides greater protection. The double-diffusion process involves soaking wood first in one chemical solution, then in a second. The two chemicals meet to form a compound that cannot be leached out.

The process described here uses two solutions made up with water at air temperature. This should be done outdoors when the temperature is not below 60° F.

First Solution

Mix 16 pounds of commercial grade copper sulfate ($CuSO_4 \cdot 5H_2O$) with 10 gallons (84 lb) water.

Because copper sulfate dissolves slowly, the solution should be mixed a day or two in advance, using warm water. The solution should be stirred very thoroughly to make sure all the salt is dissolved. Logs should soak for 2 to 3 days in this first solution.

An iron tank cannot be used for the copper sulfate solution.

Second Solution

First: Mix 7 pounds of commercial grade 70 percent arsenic acid (H_3AsO_4) solution with 11 gallons (93 lb) water.

In a separate container: Mix 21 pounds of commercial grade sodium chromate (Na_2CrO_4) with 9-1/2 gallons (79 lb) of water.

When the two separate solutions are completely dissolved, mix them together to form the second solution.

The freshly peeled logs are soaked 2 to 3 days in the copper sulfate solution and then transferred for soaking for 2 or 3 days in the second solution. The treated logs should be piled to dry for several days. When the cabin is to be constructed, any residual chemicals on the surface of the dry logs should be washed off.

The amount of solution required for each of the diffusion treatments (preservatives II and III) depends on log size and tank size. To determine the amount of liquid (gallons) required, the length of the tank should be multiplied times the depth and the width, in either feet or inches:

$$1 \text{ foot}^3 = 7.5 \text{ gallons}$$
$$1 \text{ inch}^3 = 0.0043 \text{ gallons}$$

Example

If the solution tank is 20 feet long, 2 feet wide, and the largest log is 8 inches in diameter, volume is:

$$20 \times 2 \times 2/3 \text{ feet} = 26.4 \text{ feet}^3$$

Then, the amount of liquid preservative required is:

$$26.4 \text{ feet}^3 \times 7.5 \text{ gallon/feet}^3 = 198 \text{ gallons}$$

Or, if tank volume is:

$$(20 \text{ ft} \times 12 \text{ in/ft} =)240 \times (2 \text{ ft} \times 12 \text{ in/ft} =)24 \times 8 \text{ inches} = 4608 \text{ inches}^3$$

Then the amount of liquid preservative required is:

$$4608 \text{ inches}^3 \times 0.0043 \text{ gallon/inch}^3 = 198 \text{ gallons}$$

No more solution than necessary should be prepared at one time. Too little mixture can be supplemented. Too much mixture has to be disposed of.

Preservative IV--Commercial Pressure Treatment

Logs used as sill logs, especially those placed on the ground, need to be treated more heavily to withstand fungal attack. Treatments most commonly recommended are ammoniacal copper arsenate (ACA) and chromated copper arsenate (CCA). Commercial treating plants apply these preservatives according to nationally recognized standards, for maximum protection.

Preservative V--Water-Repellent Preservative

Ingredients	For 1 gallon	For 5 gallons
40 percent pentachlorophenol (10:1 concentrate)	1-3/4 cups	2 quarts
Boiled linseed oil	1-1/2 cups	1-3/4 quarts
Paraffin wax	1 ounce	4-5 ounces
Solvent (mineral spirits, turpentine, or paint thinner)	Add to make 1 gallon	Add to make 5 gallons

Melt the paraffin in a container heated with hot water. Be sure the solvent is at room temperature. Slowly pour the hot paraffin into the solvent mixing the new combination vigorously to keep the wax from solidifying at the bottom of the container. When the wax has been added, add the linseed oil and then the penta. Stir until the mixture is uniform.

Brush the mixture into cracks or joints.

If the solution is held at low or freezing temperatures, the ingredients may separate. Should this happen, the solution can be reheated to room temperature and stirred to a uniform mixture once again.

Preservative VI--Natural Finish (Pigmented)

For exterior surfaces of the finished log cabin, for decay resistance and color, the pigmented natural finish provides a durable, relatively inexpensive treatment. The following solution should be applied at the rate of about 150 square feet per gallon.

Ingredients for approximately 5 gallons	Quantity
40 percent pentachlorophenol (10:1 concentrate)	2 quarts
Boiled linseed oil	3 gallons
Paraffin wax	1 pound
Solvent (mineral spirits, turpentine, or paint thinner)	1 gallon
Tinting colors (according to list below)	1 to 2 quarts
Zinc stearate If available, can be added to reduce the tendency of the pigment to cake during storage.	1 cup

Some suggested colors are:

Desired color	*Pigment(s) required*	*Pigment quantities for 5 gallons of stain*
Cedar	Burnt sienna	1 pint
	Raw umber	+1 pint
Light redwood	Burnt sienna	1 quart
Chocolate brown	Burnt umber	1 quart
Fruitwood brown	Raw sienna	1 pint
	Raw umber	+1 pint
	Burnt sienna	+1/2 pint
Tan	Raw sienna	1 quart
	Burnt umber	+3 fluid ounces
Green gold	Chrome oxide	1 pint
	Raw sienna	+1 pint
Forest green	Medium chrome green	1 quart
Smoky gray	White house paint	1 quart
	Raw umber	+6 fluid ounces
	Lamp black	+3 fluid ounces

These are available from hardware stores.

Pigmented stains are the most durable when applied to rough or weathered surfaces. When two coats are applied to a rough surface, the second coat should be applied before the first has dried so that both coats can penetrate. Stain that remains on the surface after 3 or 4 hours should be wiped up or rubbed in to provide a uniform flat appearance. To avoid lap marks in the application of penetrating stain, the full length of a log should be finished without stopping for more than 5 minutes. The finish should also be stirred frequently to maintain uniform suspension of the pigments.

U.S. Forest Products Laboratory.

Protecting log cabins from decay, by R. M. Rowell, J. M. Black, L. R. Gjovik, and W. C. Feist, Madison, Wis., FPL, 1976.
11 pp. (USDA FS Gen. Tech. Rep. FPL-11)

Discusses causes of decay, selection and handling of logs to provide most decay resistance, selection and application of preservatives to logs, construction details for building a decay-resistant cabin, and finishing and maintenance practices for an existing cabin.

Includes descriptions of preservative types and a bibliography for more detail on decay and construction.

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CAUTION: Wood preservatives can be injurious to man, animals, and plants. Therefore, for safe and effective usage, it is essential to follow the directions and heed all precautions on the labels. The wood preservative pentachlorophenol, for example, is toxic to animals and humans and is a strong root poison and defoliant. It is, therefore, advisable to wear rubber gloves and protective masks and to cover nearby plant life when using any material containing pentachlorophenol. Pentachlorophenol and creosote-containing preservative solutions should never be applied to the inside of a cabin.

Store preservatives in original containers under lock and key--out of reach of children and pets--and away from foodstuff. Use all preservatives selectively and carefully. Follow recommended practices for the disposal of surplus preservatives and preservative containers.

NOTE: Registrations of preservatives are under constant review by the Environmental Protection Agency and the Department of Agriculture. Use only preservatives that bear a Federal registration number and carry directions for home and garden use. Since the registration of preservatives is under constant review by State and Federal authorities, a responsible State agency should be consulted as to the current status of any preservative.

COVER

This duplex cabin at the Lincoln Village in New Salem, Ill., exhibits remarkable craftsmanship and a high degree of development. If the reconstruction can be assumed to be reasonably authentic, the chimney detailing indicates that the cabin was built not by the frontiersmen, but by a skilled log house builder. Photograph by Gunard Hans.